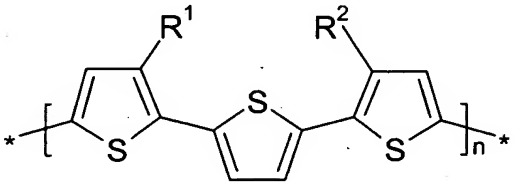
Claims

1. A semiconductor or a charge transport material comprising a compound or a polymer comprising a 3,3"-disubstituted poly-2,2‘:5‘,2‘‘-terthiophene unit of formula I



I

wherein R^1 and R^2 are, independently of each other, straight chain or branched alkyl, alkoxy, alkenyl, alkylcarbonyl, alkoxycarbonyl, alkylcarbonyloxy, alkylthio, alkylthioalkyl, alkoxyalkyl, alkylsulfinyl or alkylsulfonyl with 1 - 20 C-atoms, or alkylaryl or arylalkyl comprising an alkyl group with 1 - 20 C atoms, and n is an integer > 1.

2. An optimal, electrooptical, or electronic device comprising a semiconductor or a charge transport material according to claim 1.

3. A semiconductor or a charge transport material according to claim 1, wherein n in formula I is an integer of 2 - 5000.

4. A semiconductor or a charge transport material according to claim 1, wherein R^1 and R^2 in formula I are independently, a straight chain alkyl with 1 - 12 C atoms.

5. A field effect transistor comprising a semiconductor or a charge support material according to claim 1.

6. An optical, electrooptical or electronic device, or a field effect transistor comprising a semiconductor or charge transport material according to claim 3.

7. A thin film transistor or a thin film transistor array for a flat panel display, a radio frequency identification tag, an integrated circuit or an organic light emitting diode comprising a field effect transistor according to claim 5.

8. A security marking or device comprising a field effect transistor according to claim 5.

9. A radio frequency identification tag comprising a field effect transistor according to claim 5.

10. A security marking or device comprising a radio frequency identification tag according to claim 9.

11. An electroluminescent display comprising an electroluminescent layer and/or a charge transport layer, wherein at least one layer comprises a field effect transistor according to claim 5.

12. A liquid crystal display comprising a backlight, wherein the backlight comprises a field effect transistor according to claim 5.

13. A field effect transistor comprising:

a gate-dielectric;

a drain electrode;

a source electrode;

a gate electrode;

a substrate; and

a charge transport material according to claim 1.

14. A thin film transistor comprising:

a transistor substrate comprising a chemically modified plastic substrate surface; and

a field effect transistor according to claim 5.

15. A thin film transistor comprising:

a pre-patterned insulating substrate; and

a field effect transistor according to claim 5.

16. A method of making a thin film transistor, comprising solution processing a semiconductor according to claim 1.

17. A method of forming conducting ionic species comprising oxidatively or reductively doping a semiconductor or a charge transport material according to claim 1.

18. A semiconductor or a charge transport material according to claim 1, further comprising delocalized ionic centers in the material.